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Amendments to the Specification:

There are no amendments to the original specification. The original specification is resubmitted in its original form and is presented below:

Immersion Optics Fluid Dispenser

DESCRIPTION

BACKGROUND OF INVENTION

1. Field of the Invention

This invention relates to the need to provide an instrument to simplify and accurately dispense the application of immersion fluid for immersion optical microscope systems.

2. Description of Prior Art

No mechanism exists to accomplish the task of dispensing the immersion fluid. Presently, the fluid is dispensed manually utilizing an eye dropper or its equivalent. For upright microscopes, it is not uncommon for excessive fluid to be dispensed on the specimen using this technique. When using an inverted microscope, the user must apply the drop of fluid on the objective lens which can be partially obscured as it is nested inside, or below, the microscope stage.

SUMMARY OF INVENTION

It is the object of this invention to provide the microscope user with a device that will accurately dispense the precise amount of immersion fluid at the proper location. It is another object of this invention to accomplish these tasks in either a manual mode with minimal demands on the user, or in an automated configuration. The satisfaction of these objectives will result in a cleaner work environment, less waste of the immersion fluids, and the elimination of the awkward and inaccurate application procedures currently in use.

BRIEF DESCRIPTION OF DRAWINGS

In the drawings:

FIG. 1 is a side view of the dispensing mechanism.

FIG. 2 is a top view of the dispenser in its stowed condition.

FIG. 3 is a top view of the dispenser in position to dispense the fluid.

FIG. 4 is a top view of the dispenser at the end of the dispensing cycle

FIG. 5 is a functional drawing of the peristaltic dispensing assembly.

DETAILED DESCRIPTION

Figure 1 is a functional diagram of the dispensing system for an inverted microscope. The desired immersion fluid is contained in the reservoir 1. Whenever the peristaltic driver is actuated, fluid is drawn into the peristaltic processing chamber 2 and pushed out through the dispensing port 3.

The mechanical actuator is a two-stage device with an upper section 4 and a lower section 5. Both sections share a common pivotal axis. The upper section contains a constrained spring 6 that initially forces the upper section to rotate in concert with the lower section.

As the flexible driving plunger 7 is initially displaced, it rotates the complete assembly about the pivot and positions the output port of the fluid dispenser into position above the front objective lens 8. At this point, the upper section encounters the fixed stop 9 and ceases rotating. Further displacement of the plunger causes the lower section to overcome the spring's static force. The lower section continues to rotate and a linear actuator 10 drives the ratcheting roller bearing assembly 11. By peristaltic action, the immersion fluid is squeezed from the peristaltic chamber 12 out through the dispenser outlet port.

The fluid removal process mimics the mechanical positioning events of the dispensing cycle. However, when the coaxial arm 13 is in position over the lens, a vacuum source is activated at the vacuum port 14 that causes the previously deposited fluid to be extracted from the lens surface.

For upright microscope systems, the same operational sequence of events would be invoked. However, the fluid would be deposited on the specimen slide rather than the objective lens surface.